CLAIMS

1. In a magnetic resonance imaging (MRI) system having a defined field of view (FOV), a method for producing an image of a subject over an extended field of view (FOV_{tot}) which is larger than the FOV, the steps comprising:

a) moving the subject through the MRI system such that the extended field of view (FOV_{tot}) passes through the defined field of view (FOV);

b) continuously acquire NMR data from the subject as it is moved through the FOV by repeatedly performing an imaging pulse sequence which acquires NMR data comprising a view of the subject;

c) adjusting each view acquired in step b) using subject position information;

d) storing each adjusted view in a data matrix; and

e) reconstructing an image using the data matrix.

2. The method as recited in claim 1 in which the MRI system has a table, and step a) is performed by:

i) placing the subject on the table; and

ii) moving the table.

3. The method as recited in claim 2 in which the table is moved continuously while performing step a).

4. The method as recited in claim 2 in which the table is moved at different velocities while performing step a).

5. The method as recited in claim 2 which includes:

injecting the subject with a contrast agent; and

in which the table is moved at a velocity which tracks the contrast agent as it moves through the extended field of view (FOV_{tot}).

6. The method as recited in claim 5 which includes:

reconstructing monitoring images during the performance of step a) from data stored in the data matrix.

7. The method as recited in claim 1 in which step c) includes adjusting the location in the data matrix in which the view is stored in step d).

8. The method as recited in claim 1 in which step c) includes adjusting the phase of the NMR data in the view.

9. The method as recited in claim 2 in which step c) includes adjusting the location in the data matrix in which the view is stored in step d) as a function of the table location at the time the view is acquired in step b).

10. The method as recited in claim 2 in which step c) includes adjusting the phase of the NMR data in the view as a function of the table location at the time the view is acquired in step b).

11. The method as recited in claim 2 in which step b) further includes:

i) acquiring table location information as each view is acquired; and

the table location information is used in step c) to adjust each corresponding view.

12. The method as recited in claim 11 in which step c) includes:

i) performing a Fourier transformation of the NMR data in the view; and

ii) calculating a location in the data matrix for the transformed view as a function of the table location at the time the view was acquired in step b).

13. The method as recited in claim 1 in which step c) includes:

i) adjusting the phase of the NMR data in the view;

ii) Fourier transforming the phase adjusted NMR data in the view; and

iii) adjusting the location in the data matrix in which the Fourier transformed view is stored in step d) as a function of subject location at the time the view is acquired in step b) with respect to a subject reference location.

14. The method as recited in claim 1 in which the performance of the imaging pulse sequence in step b) includes:

i) producing a readout magnetic field gradient during the acquisition of said NMR data comprising a view, and the readout magnetic field gradient is oriented in the same direction as subject movement.

15. The method as recited in claim 14 in which step c) includes:

i) Fourier transforming the acquired view; and

ii) adjusting the location in the data matrix in which the Fourier transformed view is stored in step d) as a function of subject location at the time the view is acquired in step b) with respect to a subject reference location.

16. The method as recited in claim 1 in which the data matrix is a two-dimensional array of data.

17. The method as recited in claim 1 in which the data matrix is a three-dimensional array of data.

18. In a magnetic resonance imaging (MRI) system, the improvement comprising:

a) a table for supporting a subject and for moving the subject through a defined field of view (FOV) of the MRI system;

b) a pulse generator for operating the MRI system under the direction of a pulse sequence to continuously acquire a series of NMR data views of the subject as the subject is moved through the FOV;

c) means for adjusting each acquired view as a function of subject location at the time the view is acquired with respect to a reference subject location;

d) a memory for storing the adjusted views as a data matrix; and

e) means for reconstructing an image from data in the data matrix which has a field of view in the direction of table motion which is larger than the defined FOV.

19. The improvement as recited in claim 18 in which element c) includes:

i) means for Fourier transforming each acquired view; and

ii) means for storing the Fourier transformed view in the data matrix at a location determined by the subject location at the time the view was acquired.

20. The improvement as recited in claim 18 which also includes:

f) means for reconstructing an image from data in the data matrix as the subject is moved through the defined FOV and views are being acquired.

21. The improvement as recited in claim 20 which also includes:

g) means for controlling the velocity of table motion as views are being acquired.